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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
09/924,816	08/07/2001	Shane J. Trapp	M122-1673	2579

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EXAMINER
PEREZ RAMOS, VANESSA

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/924,816	TRAPP ET AL	
	Examiner	Art Unit	
	Vanessa Perez-Ramos	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-88* is/are pending in the application.

4a) Of the above claim(s) *69-88* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
4) ☐ Interview Summary (PTO-413) Paper No(s) _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-68, drawn to a method of forming an integrated circuit, classified in class 438, subclass 705.

II. Claims 69-88, drawn to an integrated circuit, classified in class 257, subclass 40.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make another materially different product, such as an integrated circuit that is not doped with Al, Ga or B.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Mark Matkin on Dec. 12, 2002 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-68. Affirmation of this election must be made by applicant in replying to this Office action. Claims 69-88 are

withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 5, 11-12, 14-16, 50, 53 and 55 are rejected under 35 U.S.C. 102(b) as being anticipated by van Ommen et al. (U.S. 4,514,251).

In regard to claims 1-3, 5, 11-12, 14-16, 50, 53 and 55, van Ommen discloses a method comprising: forming a silicon nitride film over a substrate (col. 4, lines 33-35); implanting gallium ions on the silicon nitride film (col. 4, lines 35-36 and col. 5, lines 3-6), which reads on Applicant's "forming at least one enriched region..."; forming a silicon dioxide layer in a position that is "proximate" to the silicon nitride layer (col. 5, lines 43-48); and selectively removing, by etching, the silicon oxide layer (col. 6, lines 23-36), which inherently reads on Applicant's "the at least one enriched region enhancing selectivity..." since both Applicant and van Ommen follow the exact same procedure.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 4, 6-10, 13, 51-52, 54 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Ommen (U.S. 4,514,251) as applied to claims 1-3, 5, 11-12, 14-16, 50, 53 and 55 above, and further in view of Koshino et al. (U.S. 4,780,426).

In regard to the above mentioned claims, van Ommen is silent about the use of aluminum instead of gallium as the implanted ion.

Koshino discloses a semiconductor manufacturing process wherein a silicon nitride layer is implanted with either gallium or aluminum (col. 3, lines 29-36 and col. 5, lines 35-44), with similar results obtained.

It is the Examiner's position that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify van Ommen by utilizing aluminum instead of gallium as the implanted ion, as per Koshino, because aluminum and gallium are equivalents for the purpose of ion implantation of silicon nitride films, as evidenced by Koshino's disclsure.

11. Claims 17-49 and 57-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over van Ommen (U.S. 4,514,251) in view of Koshino et al. (U.S. 4,780,426) as applied to claims 1-16 and 50-56 above, and further in view of Herndon et al. (U.S. 4,843,034).

In regard to claims 17-49 and 57-68, unlike the claimed invention, van Ommen in view of Koshino do not disclose substituting the silicon nitride layer for a silicon dioxide layer, which is proximate to another silicon dioxide layer.

Herndon teaches a semiconductor manufacturing process and teaches the equivalence between silicon nitride and silicon dioxide layers (col. 4, lines 3-10), noting that both are widely used insulators, and further discloses the need for implanting ions on these layers, as it changes their composition and structure and promotes the migration and alloying of metal from conductive layers present in the structure (col. 6, lines 51-62).

It is the Examiner's position that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify van Ommen in view of Koshino by substituting the silicon nitride for a silicon dioxide layer, because of the equivalence of these materials, as evidenced by Herndon's disclosure, and the use of one equivalent for another is obvious

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Perez-Ramos whose telephone number is 703-306-5510. The examiner can normally be reached on Mon-Thurs 7:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5665.

Vanessa Perez-Ramos
Examiner
Art Unit 1765

VPR
December 16, 2002

BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700